

ABSTRACT

A method of making a silicon micromechanical structure, from a lightly doped silicon substrate having less than $<5 \times 10^{19} \text{ cm}^{-3}$ boron therein. A p+ layer having a boron content of greater than $7 \times 10^{19} \text{ cm}^{-3}$ and a germanium content of about $1 \times 10^{21} \text{ cm}^{-3}$ is placed on the substrate. A mask is formed on the second side, followed by etching to the p+ layer. An insulator is put on the p+ layer and an electronic component is fabricated thereon. Preferred micromechanical structures are pressure sensors, cantilevered accelerometers, and dual web biplane accelerometers. Preferred electronic components are dielectrically isolated piezoresistors and resonant microbeams. The method may include the step of forming a lightly doped layer on the p+ layer to form a buried p+ layer prior to etching.